

Claims

What is claimed is:

1. A method for fingerprint authentication comprising the steps of:
 - a) acquiring an image of a fingertip;
 - b) processing the image to determine a value indicative of a predetermined acquisition parameter thereof;
 - c) comparing the image to a stored biometric template, the comparison process based on the determined value; and,
 - d) performing one of an authentication and a rejection in dependence upon the comparison.
2. A method for fingerprint authentication according to claim 1 wherein the comparison process is selected based on the determined value, the comparison process involving different image processing steps for different determined values.
3. A method for fingerprint authentication according to claim 2 wherein the determined value is quantitatively indicative of the predetermined acquisition parameter.
4. A method for fingerprint authentication according to claim 3 wherein the predetermined acquisition parameter is selected from a group comprising: a moisture condition of the fingertip; and, an applied pressure of the fingertip.
5. A method for fingerprint authentication according to claim 4 wherein the comparison process uses a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values.
6. A method for fingerprint authentication according to claim 1 wherein the comparison process uses a biometric template selected in dependence upon the determined value, different biometric templates selected for different determined values.

7. A method for fingerprint authentication according to claim 5 wherein the comparison process includes the steps of:
- c1) selecting an image-processing process in dependence upon the determined value;
 - c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein; and,
 - c3) comparing the processed image to the selected biometric template, wherein the biometric template is processed according to a same selected image-processing process prior to being selected for comparison.
8. A method for fingerprint authentication according to claim 5 wherein the comparison process includes the steps of:
- c1) selecting an image-processing process in dependence upon the determined value;
 - c2) according to the selected image-processing process, processing the image to remove a subset of features contained therein;
 - c3) according to the selected image-processing process, processing the selected biometric template to remove a subset of features contained therein; and,
 - c4) comparing the processed image to the processed selected biometric template.
9. A method for fingerprint authentication according to claim 5 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with a moisture condition of the fingertip.
10. A method for fingerprint authentication according to claim 5 wherein the biometric template is selected from a plurality of biometric templates, each biometric template of the plurality of biometric templates stored in association with an applied pressure of the fingertip.
11. A method for processing a fingerprint image comprising the steps of:

- a) acquiring an image of a fingertip;
- b) processing the acquired image to determine a value indicative of a predetermined acquisition parameter thereof; and,
- c) selecting an image-processing process in dependence upon the determined value, the image-processing process for removing a subset of features of the acquired image.

12. A method for processing a fingerprint image according to claim 11 wherein the predetermined acquisition parameter is selected from a group comprising: a moisture condition of the fingertip; and, an applied pressure of the fingertip.

13. A method for fingerprint authentication comprising the steps of:

- a) acquiring an image of a fingertip;
- b) processing the acquired image to determine a value indicative of a predetermined acquisition parameter thereof;
- c) processing the acquired image according to a predetermined image-processing process to remove a subset of features from the acquired image;
- d) selecting a biometric template in dependence upon the determined value, the biometric template processed according to the predetermined image-processing process;
- e) comparing the processed acquired image to the biometric template; and,
- f) performing one of an authentication and a rejection in dependence upon the comparison.

14. A method for fingerprint authentication according to claim 13 including the step prior to step a) of:

providing a plurality of biometric template images of a same fingertip, each biometric template image associated with a different predetermined acquisition parameter, wherein each biometric template image is processed according to the predetermined image-processing process.

15. A method for fingerprint authentication according to claim 14 wherein the predetermined acquisition parameter is a moisture condition of the fingertip.
16. A method for fingerprint authentication according to claim 15 wherein the step of providing a plurality of biometric template images of a same fingertip includes the step of repeating for each predetermined moisture condition the steps of:
 - conditioning the fingertip to be in the predetermined moisture condition;
 - placing the conditioned fingertip onto a sensing surface; and,
 - capturing an image of the conditioned fingertip.
17. A method for fingerprint authentication according to claim 14 wherein the predetermined acquisition parameter is an applied pressure of the fingertip.
18. A method for fingerprint authentication according to claim 17 wherein the step of providing a plurality of biometric template images of a same fingertip includes the step of repeating for each predetermined applied pressure the steps of:
 - placing the fingertip onto a sensing surface using the predetermined applied pressure; and,
 - capturing an image of the fingertip.
19. A system for fingerprint authentication comprising:
 - a sensing area for capturing an image of a fingertip presented thereto;
 - a memory storage area for storing captured images therein; and,
 - a processor for executing code thereon to process the captured image to determine a value indicative of an acquisition parameter thereof, and to compare the captured image to a template image according to an image-processing process selected in dependence upon the determined value.
20. A system for fingerprint authentication according to claim 19 comprising a fingertip-conditioning portion for providing a predetermined fingertip condition to a fingertip placed into contact therewith.